

A sample of advanced energy code requirements from the NW

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Program

My parameters

ASHRAE 90.1 - 2004

IECC proposed 2006

WSEC 2004

Seattle 2004

All my examples Zone 4 marine/ Zone 5.

Commercial: Slab on Grade

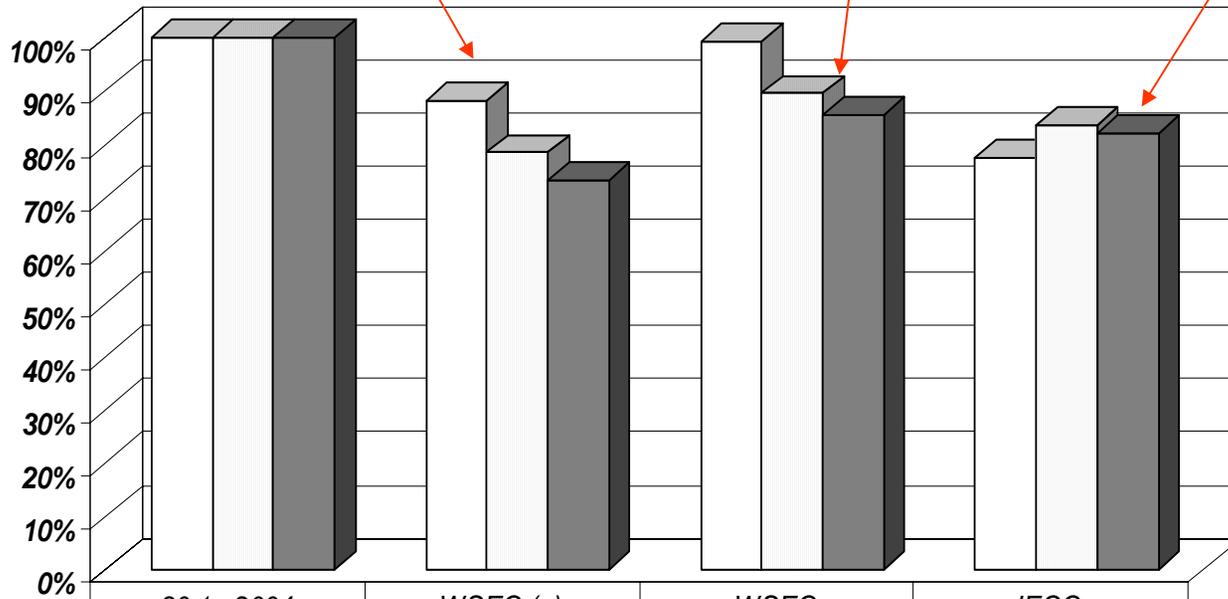
6000 SF / 20% Glazing to above grade wall area

WA – Electric Resistance Heat

Walls, Slab Edge Insulation

Non Metal Windows at U- 0.35

Example: No Basement
non-metal windows



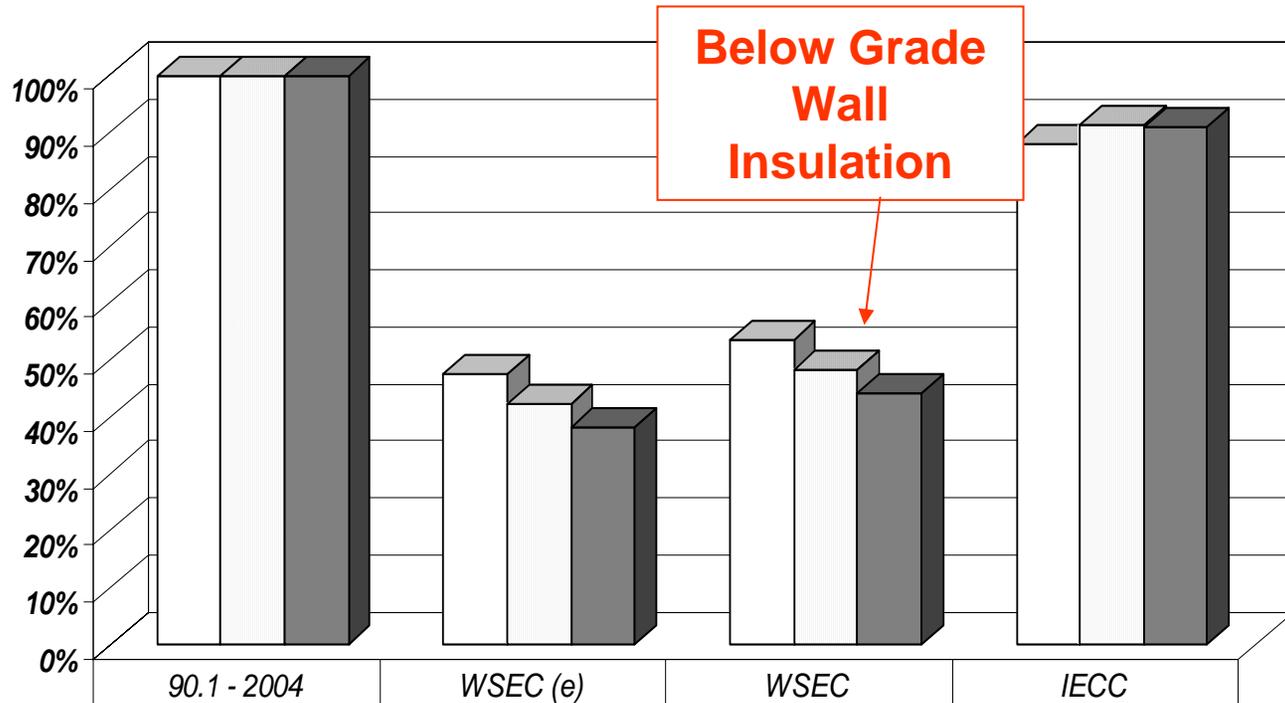
	90.1 - 2004	WSEC (e)	WSEC	IECC
□ With Mass Walls	100%	88%	99%	77%
□ With Steel Frame Walls	100%	78%	89%	84%
■ With Wood Framed Wall	100%	73%	85%	82%

UA compared to 90.1

Commercial: With Basement

6000 SF + basement 20% Glazing to above grade wall area

Commercial UA Example: With Basement
Non-metal windows



	90.1 - 2004	WSEC (e)	WSEC	IECC
With Mass Walls	100%	48%	54%	88%
With Steel Frame Walls	100%	42%	48%	91%
With Wood Framed Wall	100%	38%	44%	91%

UA compared to 90.1

Ground Contact Insulation

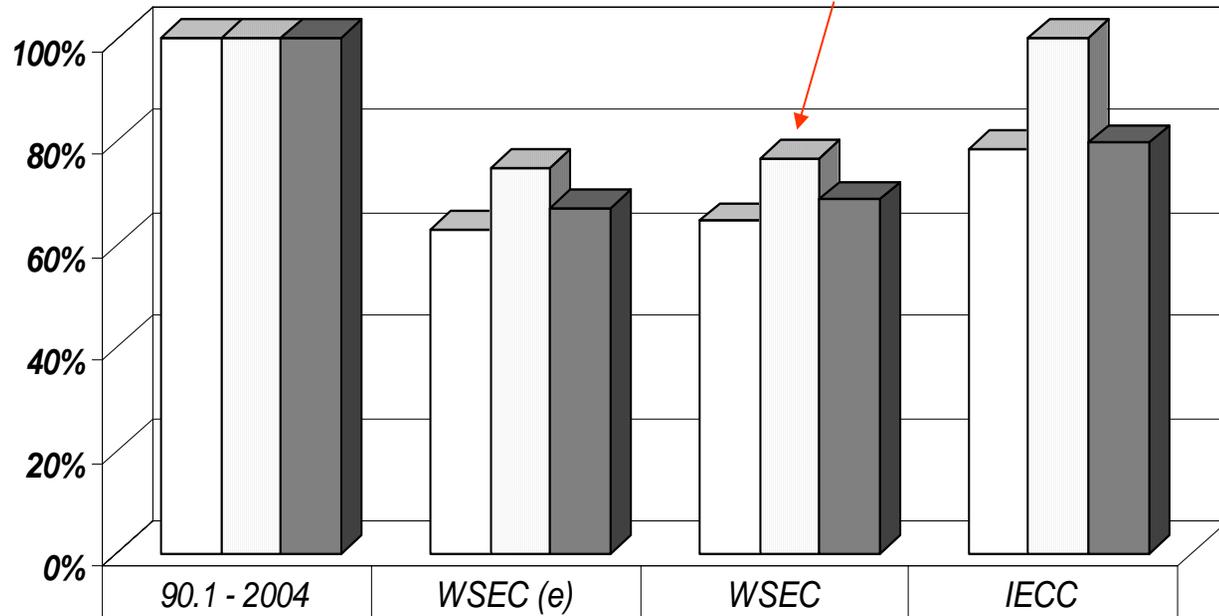
Probably a good idea anywhere the winter ground temp is less than 52 degrees.

This has been held up by ASHRAE 90.1 process

Dorm

Dormitory UA Example: No Basement
Congregate Living Area Only. No Common Area
Non-metal windows

Is this a Non-Residential or Residential Structure?



	90.1 - 2004	WSEC (e)	WSEC	IECC
With Mass Walls	100%	63%	65%	78%
With Steel Frame Walls	100%	75%	77%	105%
With Wood Framed Wall	100%	67%	69%	80%

UA compared to 90.1

Define Residential

When compared commercial, residential has low internal gains

IECC needs to develop a specific multi-family path for structures > 3 stories

IECC needs to address high rise multi-family construction

Complex systems like concrete platform construction, or highly glazed construction needs specific guidance.

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HVAC

Economizers:

OK, Economizers aren't good in hot-humid climates....

IECC: > 65,000 54,000 BTU

IECC: no limit on number of units

WSEC:

If outdoor air is accessible > 20,000 BTU

If outdoor is in not easily accessible > 54,000 BTU

Seattle: Total Capacity of Units without Economizer
240,000 BTU or 10% of total units.



WASHINGTON STATE UNIVERSITY



EXTENSION ENERGY PROGRAM

Natural Exposure Test Facility
Chuck Murray 360 956-2157

Part Load HVAC Requirements

Fan Power > 10 HP

IECC >~~25~~ 10 HP

Seattle: ECM motors required on VAV series terminals.

Oregon: Pumps > 10 HP

Lighting Controls

Occupancy Sensors

WSEC, Oregon: All classrooms, meeting and conference rooms and offices < 300 SF

WSEC Daylight area control

Lights by the windows are on a different set of switches than core of building.